

S/035/62/000/004/044/056  
A001/A101

The theory of geodesic lines in tensor representation

The equation  $r \sin A = C$  (Clairaut theorem) is the first integral of (2). The general equation of a geodesic looks as follows

$$1 = C \int \frac{du}{r \sqrt{r^2 - C^2}} + C_1,$$

where  $C$  and  $C_1$  are determined from initial conditions,  $u$  is reduced latitude. The properties of a geodesic can be described by one equation:

$$\frac{dr}{ds} d^2 r N = 0 \quad (3)$$

where  $r$  is radius-vector. The (3) written in the tensor form shows that geodesics are invariant to bending the surface. The geodesic can also be determined from the system of differential equations

$$\left. \begin{aligned} \frac{d}{ds} \left( \gamma_{11} \frac{du^1}{ds} \right) &= \frac{1}{2} \left[ \frac{\partial \gamma_{11}}{\partial u^1} \left( \frac{du^1}{ds} \right)^2 + \frac{\partial \gamma_{22}}{\partial u^1} \left( \frac{du^2}{ds} \right)^2 \right] \\ \frac{d}{ds} \left( \gamma_{22} \frac{du^2}{ds} \right) &= \frac{1}{2} \left[ \frac{\partial \gamma_{11}}{\partial u^2} \left( \frac{du^1}{ds} \right)^2 + \frac{\partial \gamma_{22}}{\partial u^2} \left( \frac{du^2}{ds} \right)^2 \right] \end{aligned} \right\}$$

Card 2/3

The theory of geodesic lines in tensor representation

S/035/62/000/004/044/056  
A001/A101

or from the Gauss equation derived by him from the property of geodesics as the shortest lines:

$$\frac{dA}{ds} = \frac{1}{2\sqrt{\lambda_{11}\lambda_{22}}} \frac{\partial \lambda_{11}}{\partial u^2} \cos A - \frac{1}{2\sqrt{\lambda_{22}\lambda_{11}}} \frac{\partial \lambda_{22}}{\partial u^1} \sin A.$$

It is shown that all three properties of geodesics (coincidence of the main normal to the normal to the surface, identical equality to zero of geodesic curvature, minimum length of the arc) follow from each other. In conclusion the author considers geodesic twisting of a curve on the surface and (as an appendix) the angle between the geodesic and the normal section on an ellipsoid of revolution. There are 5 references.

N. Drozdov

[Abstracter's note: Complete translation]

Card 3/3

BESPALOV, N.A., assistant

Relations between the invariants of a curve situated on a surface.  
Izv. vys. ucheb. zav.; geod. i aerof. no.3:19-24 '63.  
(MIRA 17:1)

1. Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i  
kartografii.

BESPALOV, N.A.

Numerical methods and problems in the estimation of the accuracy  
of triangulation. Geod. i kart. no.9:8-13 S '64.

(MIRA 17:12)

L 8221-66 EWT(d)/EWT(m)/EWP(c)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(p)/EWP(l)/ETC(m)  
ACC NR: AP5026216 IJP(c) MJW/JD/NW SOURCE CODE: UR/0381/65/000/004/0056/0060

AUTHOR: Baryshev, S. Ye.; Bespakov, N. A.; Shan'kova, Z. N.; Krasota, V. K.

ORG: none

TITLE: Mechanized ultrasonic normal wave flaw detector for automatic quality control  
of aluminum alloy plates

SOURCE: Defektoskopiya, no. 4, 1965, 56-60

TOPIC TAGS: ultrasonic inspection, aluminum alloy, alloy sheet, alloy plate, plate  
ultrasonic inspection, ultrasonic flaw detector, automatic flaw detector, quality  
control

ABSTRACT: The design and the operating principles of a UDK-2L ultrasonic flaw de-  
tector for automatic quality control of aluminum alloy plates and sheets are de-  
scribed. The flaw detector operation is based on the pulse-echo method using normal  
antisymmetric waves which undergo a maximum reflection from laminations in the fd  
range of 6—12 Mc·mm ( $f$  is the ultrasound frequency and  $d$  is the metal thickness). The  
UDK-2L flaw detector has two control channels and operates with three fixed frequen-  
cies: 1.8, 2.5, and 5 Mc. It is provided with several pairs of interchangeable  
search heads, each of which is designed for a certain alloy and a definite range of  
thicknesses. The UDK-2L is capable of separating a pulse reflected from a flaw lo-  
cated at a distance of 1200 mm in sheets of AMg6 aluminum alloy. Preliminary statis-  
tical data showed that the UDK-2L ensures detection of laminations 20—30 mm long and

Cord 1/2

UDC: 620.179.16

L 8221-66

ACC NR: AP5026216

0.5—1.0 mm wide, slag inclusions, discontinuities in the cladding layer, and other types of internal flaws. Orig. art. has: 4 figures and 1 table. [MS]

SUB CODE: 13, 11/ SUBM DATE: 05Apr65/ ATD PRESS: 4148

Card 2/2 (1)

ACC NR: AP6031602

SOURCE CODE: UR/0154/66/000/002/0003/0010

AUTHOR: Bespalov, N. A. (Docent; Candidate of technical sciences)

ORG: Moscow Engineering Institute for Geodesy, Aerosurveying, and Cartography (Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii)

TITLE: New nonlogarithmic formulas for the solution of some problems in spherical geodesy

SOURCE: IVUZ. Geodeziya i aerofotos "yemka, no. 2, 1966, 3-10

TOPIC TAGS: binomial series, geodetic function, curvature radius, meridian, first vertical, elliptic integral, spherical geodesy, Geodesy

ABSTRACT: Binomial series are substituted by other formulas better for computations. The fundamental geodetic function  $V = 1 + e'^2 \cos^2 B$  for reduced latitude is given in the form

$$V = Q \left( \frac{4 + (2 + n) e'^2 \sin^2 u}{4 + (2 - n) e'^2 \sin^2 u} \right),$$

where

$$Q = \sqrt{1 + e'^2}.$$

Card 1/2

UDC: 528.23

ACC NR: AP6031602

Curvature radii for the meridian M and the first vertical N are given by the formulas

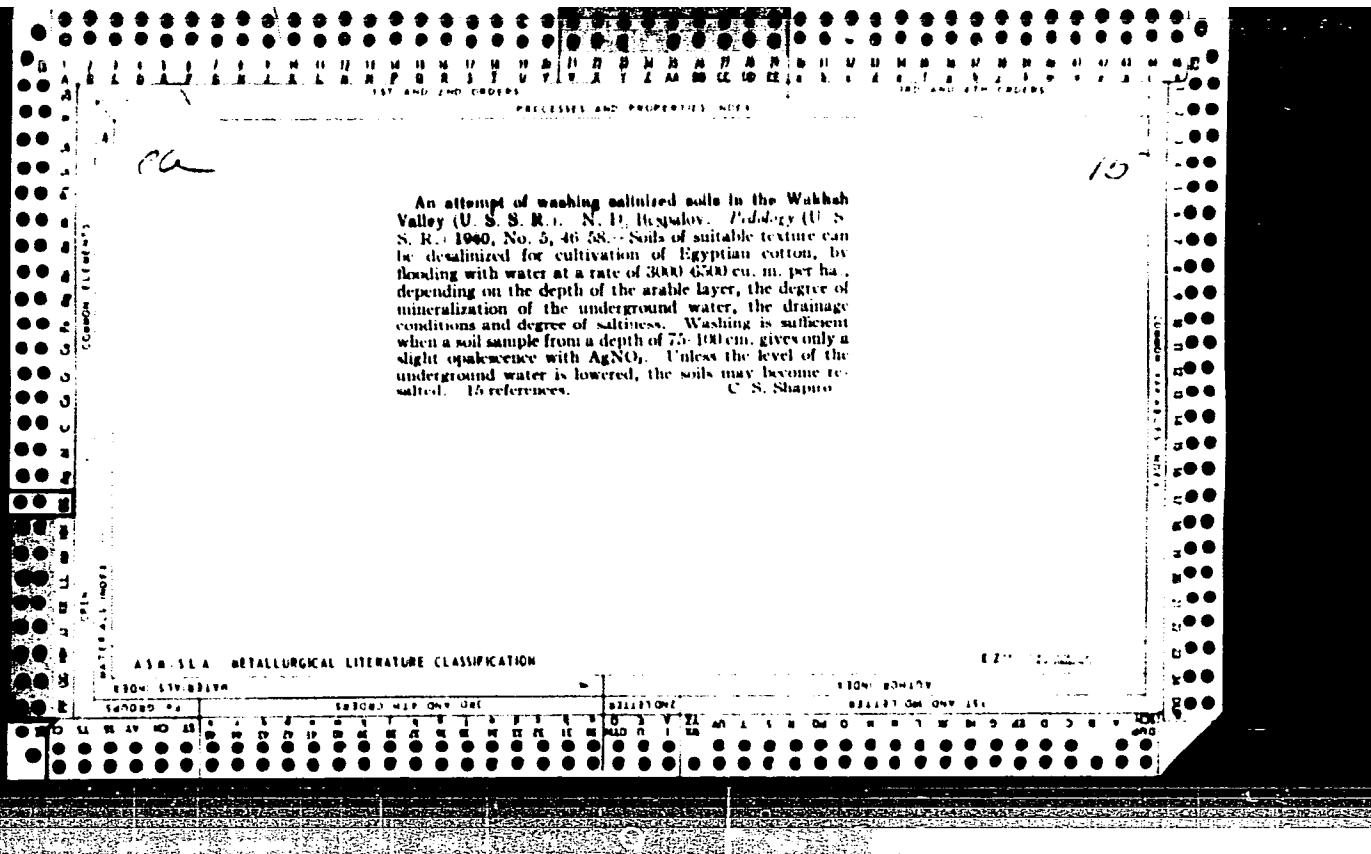
$$M = c \left( \frac{4 - e'^2 \cos^2 B}{4 + 5e'^2 \cos^2 B} \right).$$

$$N = c \left( \frac{4 + e'^2 \cos^2 B}{4 + 3e'^2 \cos^2 B} \right).$$

Integrating these formulas, the length of the meridian and the vertical arcs can be obtained, B being the geodetic altitude. Transforming the integral expression and setting numerical values for coefficients, the length of arcs for various latitudes and ellipsoids are computed. Rectangular Gauss-Krueger coordinates are computed using numerical values of curvature radii and arc length. Formulas for the computation of elliptic integrals are developed, taking the Legendre integral of the first order and transforming it by expanding into series. These formulas are derived to determine geodetic coordinates and arc lengths. Orig. art. has: 3 tables and 34 formulas.

SUB CODE: 08/ SUBM DATE: 27Jul65/ ORIG REF: 002

Card 2/2



The soils of the Orkhon and Selenga basins and their agricultural importance N. D. Beqalov *Pedologia* (U.S.S.R.) 1946, 289 p. Total analyses and water content of soils of vertical zonation, from meadow-alluvial through chestnut brown to mountain chernozem, are given. Analyses of the water from the rivers Orkhon and Selenga are also given.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205110019-2"

BESPALOV, N. D.

"Hydrological Districts and Soil Improvement Regions of the Left Bank of the River Vakhsh,"  
Pochvovedeniye (Pedology), No 12, 1946 (736-744).  
(Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

BESPALOV, N. D.

"Soils of the Mongolian National Republic." Sub 4 Apr 51, Soil  
Inst imeni V. V. Dokuchayev, Acad Sci USSR.

Dissertations presented for science and engineering degree in  
Moscow during 1951.

SO: Ser. No. 480, 9 May 51

BESPALOV, N.D.

[Soils of the Mongolian People's Republic] Pochvy Mongol'skoi  
Narodnoi Respubliky. Moskva, Izd-vo Akademii nauk SSSR, 1951.  
318 p. (MLRA 6:11)  
(Mongolia--Soils) (Soils--Mongolia)

BESPALEV, N.D.

The Committee on State Prizes (of the Council of Ministers USSR) in the field of science and inventions announces that the following scientific works, popular articles, films, books, and textbooks have been submitted for consideration for State prizes for the years 1949 and 1950. (Sovetskaya Kultura, Moscow, No. 204, p. 10, 1949)

Name:	Title of work	Researched by:
Bespakov, N. D.	"Soils of the Mongolian Peoples Republic"	Stalingrad Agricultural Institute

1. BESPAKOV, N. D.
2. USSR (600)
4. Soils - Mongolia
7. Soils of Mongolia. Pochvovedenie No. 4, 1953.
9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

BESPALOV, N. F.

Bespakov, N. F. -- "The Physical Properties of Light Serozems and Their Improvement through Cultivating Grasses under Crop Rotation." Kazakh Affiliate, All-Union Order of Lenin Academy of Agricultural Sciences imeni V. I. Lenin. Sci Res Inst of Farming imeni Academician V. R. Vil'yams. Tashkent, 1956. (Dissertation For the Degree of Candidate in Agricultural Sciences).

So: Knizhnaya Letopis', No. 11, 1956, pp 103-114



BESPALOV, N.F., kand. sel'skokhoz. nauk

Irrigation system of the Pakhta-Aral State Farm. Zemledelie 25  
no.6:20-24 Je '63. (MIRA 16:7)

1. Glavnnyy agronom sovkhosa "Pakhta-Aral".  
(Golodnaya steppe—Cotton—Irrigation)

BENSPALOV, N.G., inzh.

Modernized shock absorbing apparatus of the Sh-1-TM Coupler.

Vest. TSNII MPS 23 no. 6:34-37 '64.

(MIRA 17:10)

BESPALOV, N.G.; SHILOV, V.A.; NOVIKOV, I.N., red.; FILIPOVA, L.S.,  
red.; VOROB'YEVA, E.V., tekhn.red.

[Reinforced automatic coupling system] Usilennoe avto-  
stsepnnoe ustroistvo. Pod red. I.N.Novikova. Moskva, Trans-  
zheldorizdat, 1963. 28 p. (MIRA 16:11)  
(Car couplings)

BFSPALOV, N.G., inzh.

Modernized coupling systems for heavy freight cars. Zhel. dor.  
transp. 47 no. 11:40-53 N '65 (MIRA 19:1)

BESPALOV, N., inzh.

Maintenance and repair of garage equipment. Avt.transp. 42 no.2:  
17-18 F '64. (MIRA 17:3)

BESPALOV, N.M.

Rapid method of determining calcium oxide in dunite and  
forsterite. Ogneupory 27 no.12:569 '62. (MIRA 15:12)

1. Panteleymonovskiy ogneupornyy zavod im. K. Marksya.  
(Refractory materials—Testing)  
(Indicators and test-papers)

93-4-11/20

AUTHOR: Bespalov, N. V., Malkis, I. S.

TITLE: Utilization of Communication Channels for Purposes of  
Telemechanics in Pipeline Transportation (K voprosu  
ispol'zovaniye kanalov svyazi v truboprovodnom transporte  
dlya tseley telemekhaniki)

PERIODICAL: Neftyanoye Khozyaystvo, Nr. 4, April 1957, pp. 42-46  
(USSR)

ABSTRACT: The remote control of equipment located along a pipeline's right-of-way is effected by means of communication lines installed along the pipeline. Telephone wires are used primarily for administrative and dispatcher-service purposes. Due to the limited number (3-15) of wires used for this purpose, only one or two telephone wires are usually set aside for telemechanical purposes. This article deals with the number of signals which the existing communication lines and equipment built by the Soviet industry can transmit for telemechanical and tele-metering purposes. The messages are transmitted over the selected communication lines in the form of coded signals. Amplifying stations are located every 150-200 km, this

Card 1/4

93-4-11/20

Utilization of Communication Channels for Purposes of Telemechanics  
in Pipeline Transportation. (Contd)

distance corresponding to the average distance between the pumping (booster) stations located along the pipeline. Figure 1a shows a wiring diagram with several remote control devices. The call signal is sent from an intermediate pumping station in three d.c. groups of impulses, the total number of impulses being 19 of which 17 are actuating impulses. This arrangement allows 78 different impulse combinations. Figure 1b shows a slightly different wiring diagram permitting 19 actuating impulses. Figure 2 shows still another diagram, similar to that shown in Figure 1a, but modified by a "Kaylo" coil. Subsequently the author describes how telephones operating on high frequency channels could be utilized for remote control and telemetering purposes. The ordinary telephone channel operates on 300 to 2700 cycles. By using special filters used in voice-frequency telegraphy, the 300-270 cycle

Card 2/4

93-4-11/20

Utilization of Communication Channels for Purposes of Telemechanics  
in Pipeline Transportation. (Contd).

channel can be divided into narrow bands of 140 cycles each, every band representing one station along the right-of-way. Signals are transmitted by step-by-step switches. In telemetering a special commutator bar is used. A switch with 20 contacts ( $n = 20$ ) can transmit 20 signals. If a greater number of signals is required, additional commutator bars must be installed, so that  $N$ (number of signals) =  $na$  where  $n$  = number of contacts and  $a$  = number of switches. In this case frequency generators and step-by-step switches are required (Fig.3). Another method involving channels of 100-200 cycles calls for selectors with accompanying rectifiers (Fig.4). By increasing the number of impulses to 29 (maximum for each selector) the total number of signal combinations is increased to 300. As the number of combinations increases, the receivers become more complicated. Thus, by using selectors, filters, voice-frequency telegraph devices, step-by-step switches for automatic telephone stations and other Soviet-made devices, various signaling systems can be devised for one telephone channel. In conclusion the author divides

Card 3/4

93-4-11/20

Utilization of Communication Channels for Purposes of Telemechanics  
in Pipeline Transportation. (Contd).

signals employed by a telemechanized intermediate pipeline station into three groups: In the first group are the "on" and "off" signals actuating such equipment as pumps, electrical and Diesel engines, gate valves, etc. Two signals are required to operate each of the above mentioned units. The total number of signals is double the number of actuated units, although it is possible to operate the same number of units with half as many signals, by repeating the same signal twice, the first time using it to switch the unit on, the second time to turn it off. Selectors and resonance relays are recommended for signaling with the first group of signals. The second group are telemetering signals. These select one of many identical units and connect it with the main telephone line for a certain period of time. These signals are used to measure levels in storage tanks, pressures, flows, temperatures, etc. The number of required signals equals the number of units to be actuated, plus one. Step-by-step switches are used with this group of signals. To the third group of signals belong continuous signals, whose number is determined by the specific requirements of various operating conditions.

Card 4/4  
AVAILABLE: Library of Congress.

BESPALOV, N.V., inzh.

Pipelines need improved communication lines. Stroi. truboprov. 3  
no.7:12-13 Jl '58. (MIRA 12:1)  
(Pipelines) (Telephone)

AUTHOR: Bespalov, N.V.

90-58-6-6/7

TITLE: The Installation of Light-Duty Communication Lines on Oil Fields (Ustroystvo oblegchennykh liniy svyazi na neftepromyslakh)

PERIODICAL: Energeticheskiy Byulleten', 1958, Nr 6, pp 28-30 (USSR)

ABSTRACT: The author suggests the use of cross-shaped telephone line supports from thin steel tube for lines from drilling rig to office building. He lists the advantages of such an arrangement and quotes facts and figures to support his proposal. There is 1 sketch.

Card 1/1      1. Telephone lines-Installation

AUTHORS: Bespalov, N.V., Lulanov, V.S. SOV-90-58-10-7/9

TITLE New Equipment for Dispatcher Communications (Novaya ap·ara-tura dispetcherskoy svyazi)

PERIODICAL: Energeticheskiy byulleten', 1958, Nr 10, pp 22 - 25 (USSR)

ABSTRACT: The authors state that the railway selective communications system, widely used in the national economy, has some fundamental defects. However, a new type of equipment for dispatcher communications, using voice-frequency ringing, in which these defects are absent, has now been developed. Its chief characteristic is that audio frequencies are used for the transmission of the selective ring; this enables it to be switched into lines occupied by high-frequency channels, or directly into the channels themselves. Seven call frequencies are used for the selective ringing: 317, 435, 528, 780, 1065, 1460, and 2000 cycles. The first six are used for individual calls between intermediate points, and the last for the group calling of all the intermediate points at once. The equipment permits 30 intermediate points (sets) being switched in to one circuit (line of communication). The control office equipment consists of a desk fitted onto the dispatcher's table. The measurements of the desk are

Card 1/2

New Equipment for Dispatcher Communications

SOV-90-58-1C-7/9

380 x 260 x 248 mm. It houses a call frequency generator with buttons, and the dispatcher's amplifier with a loudspeaker. After a detailed description of the equipment the authors state that it is vastly superior to equipment using selective ringing, as there are hardly any relays requiring careful servicing and adjusting. The power supply for the intermediate points and the amplifiers is, thanks to the use of semi-conductors, provided by type 3C dry batteries giving a current of about 5-6 milliamps. The equipment is not cumbersome, is simply designed and can be quickly set up. It can also be used under remote control. There are 3 circuit diagrams.

1. Communication systems--Equipment

Card 2/2

BESPALEV, N.V.

Supplying power to stations for cathodic protection of pipelines. Gaz.  
prom. no.10:51-52 O '58. (MIRA 11:11)

(Krasnodar Territory--Gas, Natural--Pipelines)  
(Electric power distribution)

BESPALOV, N.V.; MALKIS, I.S.

Special radio relay apparatus are needed for pipelines. Neft. khoz.  
36 no.54-57 My '58. (MIRA 11:6)  
(Pipelines) (Radio relay systems)

BESPALOV, N.V.; MALKIS, I.S.

Communication systems on petroleum pipelines. Neft. khoz. 39  
no.12:50-55 D '61. (MIRA 14:12)  
(Petroleum--Pipelines)

BESPALOV, N.V.; MALKIS, I.S., inzh.

Telephone apparatus with transistor amplifiers. Avtom., telem.i  
sviaz' 6 no.2:25-26 F '62. (MIRA 15:3)

1. Nachal'nik kontory svyazi Glavnogo upravleniya po sbytu nefti  
(for Bespalov). 2. Kontora svyazi Glavnogo upravleniya po sbytu  
nefti (for Malkis).

(Telephone--Equipment and supplies) (Transistor amplifiers)

BESPALOV, N.V.; MALKIS, I.S.

Remote control of the UPDU-57 electric drainage. Neft. khoz.  
40 no.7:56-59 J1 '62. (MIRA 17:3)

BESPAKOV, Nikolay Vasil'yevich; MALKIS, Iosif Solomonovich;  
VRONSKY, L.N., ved. red.

[Automatic control of communications in petroleum pipeline  
transportation] Avtomatizatsiya sviazi na nefteprovode.  
Moskva, Izd-vo "Nedra," 1964. 53 p. (MIRA 17:7)

RESPALOV, Nikolay Vasil'yevich; VLADIMIROV, Pavel Fedorovich;  
MALKIS Iosif Solomonovich; SHUPOLOV, Vyacheslav Ivanovich;  
KOZLOV, S.S., red.; VRONSKIY, L.N., ved. red.

[Communications in pipeline transportation] Sviaz' na tru-  
boprovodnom transporte. Moskva, Izd-vo "Nedra," 1964. 198 p.  
(MLIA 17:8)

MALKIS, I.S.; BESPALEV, N.V.

Chief operator's switchboard using transistor elements.  
Transp. i Khran.nefti i nefteprod. no. 2:28-31 '64.  
(MIRA 17:5)

1. Kontora svyazi Glavnogo upravleniya po transportu i  
snabzheniyu neft'yu i nefteproduktami RSFSR.

BESPALOV, N.V., inzh.

Principle of the differentiation of image contours and its use  
in the cognition of visual objects. Trudy Khab. IIT no.163  
79-104 '64 (MIRA 18:2)

L 9426-66 EWT(m)/EPF(n)-2/EWA(h)

ACC NR: AT5022503

UR/3135/64/000/677/0001/0003

AUTHOR: Bespalov, O.G.; Mostovaya, T.A.; Tsitovich, A.P.

42

TITLE: Neutron time-of-flight correction in a multistage detector

40

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-697, 1954. Korreksiya  
vremeni proleta neytronov v mnogosektsionnom detektore, 1-8

B+1

TOPIC TAGS: neutron detector, neutron beam

ABSTRACT: The time of flight of a neutron in a fission chamber composed of several stages is investigated. The multistage design improves the yield but decreases the resolution of spectrometer. The influence of the increased length of the multistage detector can be corrected by delaying pulses in each section. The authors discuss the method of time correction by means of a variable delay line designed for 123 lags and divided in 4 sections. The experiments were carried out with a five-sectional fission chamber. The use of this method for measurements of the U<sup>235</sup> fission cross-section is also briefly discussed. A linear electron accelerator of the Kurchatov Institute of Atomic Energy was used for these experiments. The authors express their gratitude to I.I. Mostovoy who initiated this research and to M.I. Revzner for his attention. Orig. art. has: 5 connection diagrams and 2 graphs.

Card 1/2

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205110019-2

L 9426-66

ACC NR: AT5022303

ASSOCIATION: Institut atomnoy energii im. I.V. Kurchatova (Institute of Atomic Energy) 35

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NO REF Sov: 002

OTHER: 000

Card 2/2 nids

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205110019-2"

BESPALOV, P., inzh.; ZAV'YALOV, S., inzh.; NOVIKOV, Ye., inzh.; TELESHEV, A.,  
inzh.

Equipment for washing and drying motorbuses and motortrucks.  
Avt. transp. 43 no.6:16-18 Je '65. (MIRA 18:6)

BESPALOV, P.M., inzh.-gidrogeolog; KRAVCHUK, S.V., inzh.-gidrogeolog

Water-lowering operations in the Mikhlovka open-pit mine of  
the Kursk Magnetic Anomaly. Gor. zhur. no.10:38-42 O '61.  
(MIRA 15:2)

1. Filial Instituta gornogo dela im. A.A.Skochinskogo, g.  
Gubkin.

(Kursk Magnetic Anomaly--Mine drainage)

BESPALOV, P. M., inzh.-gidrogeolog

Limits of using open-cut drainage in stripping the Mikhaylovka  
deposit of the Kursk Magnetic Anomaly. Gor. zhur. no.10:9-10  
0 '62. (MIRA 15:10)

(Kursk Magnetic Anomaly—Mine drainage)

GAZIZOV, M.S., kand. geol.-miner. nauk; LEBEDYANSKAYA, Z.P., inzh.;  
UNKOVSKAYA, N.F., inzh.; KOSTENKO, V.I., inzh.; PROZOROV, L.B.,  
kand. tekhn.nauk; BEZPALOV, P.M., inzh.; KRAVCHUK, S.V., inzh.;  
KRUPKIN, L.V., inzh.; KRUPKIN, L.V., inzh.; BEZPALOVA, S.I., inzh.;  
SHCHERBATENKO, A.P., inzh.; KOROTKOV, G.V., kand. geol.-mineral.  
nauk, retsenzent; VASIL'YEV, P.V., doktor geol.-mineral. nauk;  
retsenzent; SHEVYAKOV, L.D., akad., otv. red.; MAN'KOVSKIY, G.I., otv. red.;  
STOLYAROV, A.G., red. izd-va; GUSEVA, A.P., tekhn. red.; RYLINA, Yu.V., tekhn.  
red.

[Experience in lowering the water table in mineral deposits under  
complex hydrogeological conditions] Opyt vodoponizheniya na  
mestorozhdeniakh poleznykh iskopаемых so slozhnymi gidrogeolo-  
gicheskimi usloviiami. Mezka, Izd-vo Akad. nauk SSSR, 1963.  
411 p. (MIRA 16:5)

1. Akademiya nauk SSSR. Institut gornogo dela. 2. Chlen-  
korrespondent Akademii nauk SSSR saveduyushchiy Laboratoriye  
spetsial'nykh sposobov prokhodki gornykh vyrabotok i vodoponi-  
zheniya Nauchno-issledovatel'skogo instituta Kurskoy magnitnoy  
anomalii (for Man'kovskiy).

(Water, Underground) (Ore deposits)

FOKIN, F.F., inzh.; BESPALEV, P.M., inzh.; RODIONOV, G.A., inzh.;  
VERIGIN, N.N., prof.; KUDRYAVTSEV, G.N., inzh.;  
MAR'YANSKIY, L.P., red.

[Technical conditions for planning and carrying out hydraulic engineering operations. Open and subsurface drainage of foundation pits of hydraulic structures] Tekhnicheskie usloviia na proektirovanie i proizvodstvo gidrotekhnicheskikh rabot. Otkrytyi i gruntovyи vodoottliv kotlovanov gidrotekhnicheskikh sooruzhenii. Moskva, Gosenergoizdat, 1962.  
101 p. (MIRA 17:9)

1. Akademiya stroitel'stva i arkitektury SSSR. Vsesoyuznyy nauchno-issledovatel'skiy institut vodosnabzheniya, kanalizatsii, gidrotekhnicheskikh sooruzhenii i inzhenernoy hidrologii.

KARMANOV, I.M., general-major intendantskoy sluzhby; BESPALOV, P.N.  
starshiy leytenant; DEMENT'YEV, K.I., polkovnik [redacted]

[Automobile driving course] Kurs boshdeniya avtomobilei.[Moskva]  
Voen.izd-vo Ministerstva vooruzhennykh sil SSSR, 1946, 84 p  
(MLRA 8:10)

1. Russia (1923- U.S.S.R.) Armiya. Glavnoye avtomobil'noye upravleniye.  
(Automobile drivers)

BESPALOV, P.V.; GROMOV, A.V.

Voltage regulation in loaded 6 kv TM-type transformers. Prom.  
energ. 16 no.2:21-23 F '61. (MIRA 14:3)  
(Electric transformers)

BERNSHTEYN, Eduard Adol'fovich, inzh.; RUDYACHENKO, Nikolay  
Korneyevich, kand. tekhn. nauk; BESPALOV, P.V., kand.  
tekhn. nauk, retsenzent;

[Pulse-type radio transmitting devices; their calcula-  
tion and design] Impul'snye radioperedaiushchie ustroi-  
stva; proektirovanie i raschet. Izd.2., stereotipnoe.  
Kiev, Izd-vo "Tekhnika," 1964. 247 p. (MIRA 17:6)

BESPALOV, R Ya

AUTHOR: None given

SOV/132-58-11-2/17

TITLE: Results of the All-Union Conference of Efficiency Experts, Inventors and Innovators of the Geological Prospecting and Topo-Geodetic Services of the USSR (Ob itogakh vsesoyuznogo soveshchaniya ratsionalizacrov, izobretateley i novatorov geologorazvedochnoy i topogodezicheskoy sluzhb SSSR)

PERIODICAL: Razvedka i okhrana nedr, 1958, Nr 11, pp 4-6 (USSR)

ABSTRACT: The above mentioned conference, which took place in Sverdlovsk from 7th to 11th of October 1958, was called by the Central Committee of the Trade Union of Geological Workers, the Ministry of Geology and of Conservation of Mineral Resources of the USSR, the Central Administration of Geodesy and Cartography of the MVD of USSR and the Central Board of the Nauchno-Tekhnicheskoye Gornoye Obshchestvo (the Scientific-Technical Mining Society). A total of 655 persons, representing various professional and scientific organizations participated. The conference heard reports by representatives of the following ministries and organizations: I.S. Burdyugov (Ministry of Geology and Conservation of Mineral Resources); V.N. Shishkin (the Central Administration of Geodesy and Cartography of the MVD USSR); Ye.L. Limanov (Ministry of Geology and Conservation of Mineral Resources

Card 1/2

Sov/132-58-11-2/17

Results of the All-Union Conference of Efficiency Experts, Inventors and Innovators of the Geological Prospecting and Topo-Geodetic Services of the USSR

of the Kazakh SSR); the representatives of Central Administrations of Geology and Conservation of Mineral Resources of the RSFSR (K.P. Korshunov), Ukrainian SSR (P.I. Naydenov), and Uzbek SSR (R.Ya. Boyko). The Director of the Vsesoyuznyy institut tekhniki razvedki (the All-Union Institute of Prospecting Technique) reported on new drilling rigs and methods. He described a new drilling rig VITR-2000 now under construction, which will simplify and alleviate the work of the brigade, its hydraulic devices executing many difficult operations. The inventor R.Ya. Bespalov, from the Turkmengeofizika Trust, reported on a new adaption of the UShB-14 rig for auger drilling. Ye.I. Kalantorov reported on the first Soviet universal photo-grammetric device "SPR-2" for the compilation of maps from aerial photos. The members of the conference visited the Uralmash Plant and the Plant imeni Vorovskiy where they saw the new drilling rigs SBU-ZIV-300 for inclined drilling with hydraulic feed, and the automotive auger drilling rig UShB-14.

Card 2/2

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205110019-2

BÈSPALÖV, S. G.

Dissertation: "Determining the Capacity of Peats." Cand Tech Sci, Moscow Peat Inst,  
29 Jun 54. (Vechernaya Moskva, Moscow, 18 Jun 54)

SO: SUM 318, 23 Dec 1954

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205110019-2"

BESPALOV, S. G.

"Calculation and design of drying apparatus" by P. D. Lebedev.  
Reviewed by S. G. Bespalov. Izv vys ucheb zav; energ 7 no. 1:  
113-114 Ja '64. (MIRA 17:5)

MUKHAMEDOV, S.M.; BESPALOV, S.I.; LEVINA, L.M., red.; TSAY, A.A.,  
tekhn. red.

[Sanitary protection of products and the prevention of oc-  
cupational diseases in agriculture] Sanitarnaia okhrana  
produktov i preduprezhdenie professional'nykh zabolеваний  
v sel'skom khoziaistve. Tashkent, Medgiz, UzSSE, 1963. 59 p.  
(MIRA 17:1)

BESPALOV, S.P.

Modernization of the head-piece of diamond grinding machines  
Stan. i instr., 23, no. 4, 1952

1. BESPALEV, S. P.
2. USSR (600)
4. Lathes
7. Repair of the ways of lathes. Stan. i instr. 23 no. 10, 1952.
  
9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

BESPALOV, S. P.

USSR/Engineering - Machine Tools

Card 1/1

Author : Bespalov, S. P.  
Title : Device for Grinding Machine Ways  
Periodical : Stan. i Instr. 1, 28, Jan/1954  
Abstract : A description is given of an apparatus for grinding machine ways under factory conditions. The author presents a drawing of the above mentioned apparatus, describes its operation and lists the nomenclature of machine components. Drawing.  
Institution : .....,  
Submitted : .....

BESPALOV, S.P.

Protective shields used in high-speed milling. Stan. i instr. 28  
no.9:43 S '57. (MIRA 10:10)  
(Milling machines)

BESPALO, V.

We have great potentialities. Prom.koop. 13 no.12:13 D '59.  
(MIRA 13:4)

1. Vysshaya shkola promyslovoj kooperatsii, khimicheskiy fakul'tet.  
(Rug and carpet industry)

BESPALOV, V., inzh.-mekhanik

Use of an external washing-separating device for the improvement  
of distillate quality. Mor.flot 23 no.2:25-27 F '63.

(Feed-water purification)

/

BESPALOV, V. (Head Veterinary Doctor, Anyuisk Settlement, Magadan Oblast').  
(Abstracted NOSKOV, A. I.)

"Use of chlorophos in cases of subcutaneous Tabanus in reindeer"....  
Veterinariya, vol. 39, no. 3, March 1962

YANSHIN, A.L.; PETRUSHEVSKIY, B.A.; ALEKSANDROVA, M.I.; BORSUK, B.I.; VOLIN, A.V.; ZUBKOVSKAYA, I.M.; YAKOVLEV, D.I.; BER, A.G.; BOROVIKOV, L.I.; BOTTSOVA, Ye.P.; OVECHKIN, N.K.; BESPALOV, V.F.; SHLYGIN, Ye.D.; SPERANSKIY, B.F.; KHAKHLOV, V.A.; DITMAR, V.G.; GORSKIY, I.I., red.; KASSIN, N.G., red.; FOMICHEV, V.D., red.; DZEVANOVSKIY, Yu.K., red.; CHIKHACHEV, P.K., red.; KOMISHAN, I.S., red.; DASHKOVA, A.D., red.; VODOLAGINA, S., tekhn. red.; VDOVINA, M.P., tekhn. red.

[Geological map of the U.S.S.R., scale 1:1,000,000] Geologicheskaya karta SSSR, mashtab 1:1,000,000. [Explanatory notes to accompany sheet] Ob'iasnitel'naya zapiska k listu. \_\_\_\_ L-40 [Emba] (Emba). 1949. 56 p. \_\_\_\_ L-41 [Kzyl-Orda] (Kzyl-Orda). 1946. 20 p. L-42 [Karsakpay] (Karsakpai). 1949. 42 p. \_\_\_\_ M-41 [Turgay] (Turgai). 1948. 28 p. \_\_\_\_ M-43 [Karaganda] (Karaganda). 1947. 37 p. \_\_\_\_ N-42 [Petropavlovsk] (Petropavlovsk) 1947. 27 p. N-44 [Novosibirsk] (Novosibirsk) 1948. 33 p. \_\_\_\_ O-45 [Tomsk] (Tomsk). 1949. 26 p. \_\_\_\_ O-49 [Kirensk] (Kirensk). 1947. 40 p. Moskva, Gos. izd-vo geol. lit-ry. (MIRA 11:8)

1. Russia (1923- U.S.S.R.) Ministerstvo geologii.  
(Geology--Maps)

15-57-2-1482

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 2,  
p 44 (USSR)

AUTHOR: Bespalov, V. F.

TITLE: The Dzhungar-Balkhash Hercynian Geologic Province  
(Dzhungarsko-Balkhashskaya gertsinskaya geologiches-  
kaya provintsiya)

PERIODICAL: V sb: Voprosy geologii Azii, Vol 1, Moscow, Izd-vo  
AN SSSR, 1954, pp 129-154

ABSTRACT: Bibliographic entry  
Card 1/1

BESPALOV, V. F.

15-1957-7-9273

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7,  
p 70 (USSR)

AUTHOR: Bespakov, V. F.

TITLE: Hydrothermal Alteration of Rocks of the Dzhungaro-Balkhashskiy Geologic Province (Eastern Kazakhstan)  
[Gidrotermal'no-izmenenyye porody Dzhungaro-Balkashskoy geologicheskoy provintsii (Vostochnyy Kazakhstan)]

PERIODICAL: Sov. geologiya, vol 51, 1956, pp 224-238

ABSTRACT: The hydrothermal alteration of rocks in eastern Kazakhstan--secondary quartzites, sericitic quartzites, andalusite quartzites, quartz-sericite rocks, sericite rocks, and so forth--are associated spatially, structurally, and genetically with volcanic masses of Visean-Namurian and upper Paleozoic age. All the rocks known in this area have been altered to secondary hydrothermal forms to the metamorphic rock series

Card 1/3

15-1957-7-9273

**Hydrothermal Alteration of Rocks of the Dzhungaro-Balkhashskiy  
Geologic Province (Eastern Kazakhstan) (Cont.)**

and sandstones, tuffs, and lavas of Lower Carboniferous age; and to extrusive and intrusive dacites and keratophyres of upper Paleozoic age. After examining the structures of several specific masses of hydrothermal rock, the author decisively rejects the theory of contact origin and concludes that the facts support the principal points of the nearvent theory of origin of the hydrothermally altered rocks. Insofar as a direct connection between these rocks and volcanoes is not established, the author believes the connection is indirect. In masses showing numerous facies of alteration and mineralization, the mineralization is not associated with the sericitic stage of the hydrothermal process alone, as was formerly believed. The principal volume of hydrothermally altered rocks was formed within the upper parts of intrusions and was confined to deep zones of fracturing and crushing of the rocks. Ore mineralization in the upper parts of masses of hydrothermally altered rocks generally occurs in dissemin-

Card 2/3

15-1957-7-9273

Hydrothermal Alteration of Rocks of the Dzhungaro-Balkhashskiy  
Geologic Province (Eastern Kazakhstan) (Cont.)

ated aureoles. In the more deeply eroded parts of the masses, separate ore zones are found as stockworks, beds, and veins. Deep ore-bearing structures served as supply channels for the hydrothermal solutions of all the phases.

Card 3/3

O. V. Bryzgalin

BESPALOV, V.F.

Middle Paleozoic of the Dzungaria-Balkhash intrageosyncline. Sov.  
geol. no.52:47-54 '56. (MLRA 10:4)  
(Balkhash region--Geology, Stratigraphic)  
(Dzungaria--Geology, Stratigraphic)

15-57-12-16763  
Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 12,  
p 8 (USSR)

AUTHOR: Bespalov, V. F.

TITLE: The Upper Paleozoic of Eastern Kazakhstan (Verkhniy paleozoy Vostochnogo Kazakhstana)

PERIODICAL: Sov. geologiya, sb. Nr 52, 1956, pp 135-143

ABSTRACT: Two types of Hercynian geosynclines are distinguished in eastern Kazakhstan. 1) Geosynclines with thick volcanic-sedimentary middle Paleozoic rocks, intensely deformed (orthogeosynclines or intra-geosynclines): a) the Zaysan, subdivided into the Kaynaminskiy and the Karkaralinsk and the Southern Dzhungarskaya epigeosynclines. 2) Geosynclines with sections of Devonian and Lower Carboniferous sedimentary rocks of moderate thickness (parageosynclines): a) the Dzhezkazgan, subdivided into the Dzhezkazgan and the Teniz (sic!)

Card 1/3

15-57-12-16763

## The Upper Paleozoic of Eastern Kazakhstan (Cont.)

Tengiz ?) epiparageosynclines; and b) the Rudnyy Altay. Climatically eastern Kazakhstan was sharply divided into two regions in the late Paleozoic: a desert region on the south and west, in which red beds and chemical sediments accumulated, and a region of moist climate on the east, in which coal-bearing deposits formed. The combination of all these conditions produced three types of sections in the upper Paleozoic rocks. 1) The Dzhezkazgan series consists of red clastic and chemical sediments, the stratigraphy of which was worked out by K. I. Satpayev and others [*Osnovnyye cherty geologii i metallogenii Dzhezkazkanskogo mednorudnogo rayona. V sb: Bol'shoy Dzhezkazgan, AN SSSR, 1936 (Principal outlines of the geology and metallogeny of the Dzhezkazgan copper-ore region. In the Collection: Great Dzhezkazgan, Academy of Sciences, USSR, 1936)*]. 2) The Balkhash series is divided into four groups a) the Sayak group (the Visean group of the Lower Carboniferous), consisting of volcanic-sedimentary rocks 2 500 m thick; b) the Karkaralinsk group (the Namurian group of the Lower Carboniferous), composed of keratophyres, trachytes, comendites, quartz keratophyres, and tuff-sandstones with Card 2/3

15-57-12-16763

The Upper Paleozoic of Eastern Kazakhstan (Cont.)

plant remains, 2 400 m thick; c) the Kalmak-Emel' (Kalmak-Imel') (Middle Carboniferous), consisting of sandstones and conglomerates at the base giving way to dacites, quartz keratophyres, keratophyres and their tuffs, 1 800 m; and d) the Keregetasskiy group (Upper Carboniferous), composed of conglomerates, tuff-sandstones, and quartz-anorthoclase porphyries, 600 m thick. 3) The Irtysh series is transitional in character between the Balkhash volcanic series and the Kuznetsk series of Siberia. It is correlative of the Tashkent volcanic series.

Card 3/3

N. A. Bogdanov

BANDALETOV, S.M.; BESPALOV, V.F.; BOGATYREV, A.S.; BOK, I.I.; GALITSKIY,  
V.V.; ZHILINSKIY, G.B., IVSHIN, N.K.; KAZANLI, D.N.; KAYUPOV,  
A.K.; KONEV, A.K.; KUSHEV, G.L.; LYAPICHEV, G.F.; MEDOYEV, G.TS.;  
MONICH, V.K.; MYAGKOV, V.M.; NIKITIN, I.F.; NOVOKHATSKIY, I.P.;  
SATPAYEV, K.I.; SHLYGIN, Ye.D.; SHCHERBA, G.N.

Eminent geologist of Kazakhstan. Vest AN Kazakh.SSR 15 no.1:  
94-95 Ja '59. (MIRA 12:1)  
(Borukaev, Ramazan Aslanbekovich, 1899- )

ABULKABIROVA, M.A.; ALEKSANDROVA, M.I.; AFONICHEV, N.A.; BANDALETOV,  
S.M.; B.SPALOV, V.F.; BOGDANOV, A.A.; BOLOVIKOV, L.I.; BORSUK,  
B.I.; BORUKAYEV, R.A.; BUVAL'KIN, A.K.; BYKOVA, M.S.; DVORTSOVA,  
K.I.; DEMBO, T.M.; ZHUKOV, M.A.; ZVONTSOV, V.S.; IVSHIN, N.K.;  
KOPYATKEVICH, R.A.; KOSTENKO, N.N.; KUMPAN, A.S.; KUL'DYUKOV,  
K.V.; LAVROV, V.V.; LYAPICHEV, G.F.; MAJURKEVICH, M.V.;  
MIKHAYLOV, A.Ye.; MIKHAYLOV, N.P.; MYCHNIK, M.B.; NIDLENKO, Ye.N.;  
NIKITIN, I.F.; NIKIFOROVA, K.V.; NIKOLAYEV, N.I.; PUPYSHEV, N.A.;  
RASKATOV, G.I.; RENGARTEN, P.A.; SAVICH'eva, A.Ye.; SALIN, B.A.;  
SEVRYUGIN, N.A.; SEMENOV, A.I.; CHEJNYAKHOVSKIY, A.G.; CHUYKOVA,  
V.G.; SHLYGIN, Ye.D.; SHUL'GA, V.M.; EL'GER, E.S.; YAGOVKIN, V.I.;  
NALIVKIN, D.V., akademik, red.; PERMINOV, S.V., red.; MAKRUSHIN,  
V.A., tekhn.red.

[Geological structure of central and southern Kazakhstan]  
Geologicheskoe stroenie TSentral'nogo i Uzhnogo Kazakhstana.  
Leningrad, Otdel nauchno-tekn.informatsii, 1961. 496 p.  
(Leningrad. Vsesoiuznyi geologicheskii institut. Materialy, no.41)

(MIRA 14:7)

\* (Kazakhstan--Geology)

BESPALOV, V.F.

Riphean and Cambrian of Central Asia. Izv. AN SSSR. Ser. geol. 28 no.8;  
68-85 Ag '63. (MIRA 17:2)

1. Yuzhno-Kazakhstanskoye geologicheskoye upravleniye, Alma-Ata.

BESPALOV, V.F.

Alpine tectonics of southern Kazakhstan. Izv. AN Kazakh. SSR.  
Ser. geol. 22 no.1:8-20 Ja-F '65. (MIRA 18:6)

1. Yuzhno-Kazakhstanskoye geologicheskoye upravleniye, g. Alma-Ata.

KISELEV, L.I.; SEVRYUGIN, N.A.; BESPALOV, V.F.; ABDRAKIMANOV, K.; MORZOV,  
M.D.; MIKHAYLOV, A.P.; BEKZHANOV, G.O.; LYAPICHEV, G.F.

Resolutions of the Kazakhstan Petrographic Conference. Izv. AN  
Kazakh.SSR.Ser.geol. 22 no.5:98-103 S-0 '65.  
(MIRA 18:12)

BESPALOV, V.G., Cand Tech Sci -- "Study of service lives of crankcase lubricants in KDM-46 engines." Chelyabinsk, 1961. (Min of Agr RSFSR Stalingrad Agr Inst.) (KL 8-21, 241)

- 202a -

SERGEYEV, M.P., prof.; BESPALOV, V.G., kand.tekhn.nauk

Model studies during the testing of oil centrifuges. Trakt. i  
sel'khozmash. no.1:20-21 Ja '65. (MIRA 18:3)

1. Chelyabinskij politekhnicheskiy institut.

САВИСНЧЕНКО, В.М., инж.; БЕСПАЛОВ, В.С., канд. техн. наук

Orientation of parts by the "search method" in automatic assembly. Vest. mashinestr. 45 no.5,46-57. Mt. 165.

(MTRA 13:6)

BESPALOV, V.I. and YERGAKOV, V.S.

"Impedance Characteristics of a Flat "Magnetron" Uch. Zap. Gorkovsk.,  
Un-ta, 27, 1954, 106, 125

The design of a magnetron circuit is carried out for magnetic fields below and exceeding the critical. In first case the current is represented as sum of the constant component and of integer harmonics of the basic frequency. In the second case the cathode field consists of the sum of the constant component and of one frequency harmonic. Graphs of active and reactive conductance are plotted depending on the frequency of the equivalent magnetron circuit. At low frequency the reactive component is associated to a capacity effect, at high frequency to an inductance effect. (RZhFiz, No 11, 1955)

BEZPALOV, V. I.

621.372 1644  
Influence of Inhomogeneities on the  
Propagation of Electromagnetic Waves  
in Periodic Structures.—V. I. Bespalov  
& A. V. Gaponov. (Radioelektronika, June 1956, Vol. 1, No. 6, pp. 772-784.) The  
effect on the propagation of e.m. waves of

random inhomogeneities in transmission  
lines with periodic-profile guide surfaces is  
considered theoretically using equivalent  
circuits. The treatment leads to a difference  
equation of the second order with random  
coefficients which is solved by perturbation  
methods. Formulas are obtained for the  
dispersion of the reflection coefficient at the  
entrance to the inhomogeneous section of  
the line. Examples considered include a  
comb delay line and an interdigital system.

4  
1 JWM  
14E4C

Don Kellaway

USSR/Radiophysics - Superhigh Frequencies, I-11

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35453

Author: Bespalov, V. I., Miller, M. A.

Institution:

Title: Electromagnetic Waves in Rectangular Slots in Which the Bottom  
Is Covered by Dielectric

Original

Periodical: Uch. zap. Gor'kovsk. un-t., 1956, 30, 61-75

Abstract: A discussion of the propagation of electromagnetic waves in a rectangular U-shaped slot, the bottom of which is covered with a layer of isotropic dielectric. A new method is proposed for finding the natural waves, propagating along the slot; the fields are found in the form of a superposition of TE and TM waves relative to the direction of the aperture of the slot. From the dispersion equation obtained it follows that the attenuation factor of the field of the surface wave is independent of the width of the slot and consequently, this dispersion equation is valid also for a slot that varies in

Card 1/2

USSR/Radiophysics - Superhigh Frequencies, I-11

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35453

Abstract: width along the direction of propagation. Usual methods are used to obtain the attenuation due to the losses in the metal and in the dielectric, and to find the directivity pattern of the radiation of the first propagating wave from the aperture of the slot. The directivity pattern for this wave has a trough-like form.

Bibliography, 9 titles.

Card 2/2

BESPALOV, V. I.

621.372.2

2545. ✓ ON THE QUESTION OF THE FLUCTUATION OF PARAMETERS OF SOME LINEAR SYSTEMS. V.I.Bespalov  
Dokl. Akad. Nauk SSSR, Vol. 117, No. 2, 269-72 (1957). In Russian.

The problem of the scattering of waves propagating in bounded transmission lines reveals some particular difficulties, connected with the fact that both the primary and secondary waves are guided in the same path. Another peculiarity arises if one considers the effect of random deviations of the parameters characterizing the linear system. Such problems lead to systems of difference equations, whose coefficients are random functions. In the present work the general solution of the basic equations is given, by making

use of a successive approximation-iteration method. A comparatively simple method is developed to calculate the moments and correlation functions on the assumption that the process can be considered as a simple Markov chain. Some applications of the method are also given.

M.J.Kearsley

Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete im. N. I. Lobachevskogo. Predavлено академиком M. A. Leontovichen.

BESPALOV, V.I.

Propagation of waves in transmission lines with inhomogeneous surface impedance. Izv.vys.ucheb.zav.; radiofiz. 1 no.3:54-63 '58.  
(MIRA 12:1)

I. Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom  
universitete.  
(Radio waves) (Wave guides)

SUBMITTED: December 7, 1957  
 SOY/109-3-22/23

AUTHORS: Golubkov, P.V. and Tsiliring, Sh. Ye.  
 TITLE: The Second All-Union Conference on Radioelectronics of  
 the Ministry of Higher Education of the USSR (Vtoraya  
 Vsesoyuznaya konferentsiya MVO SSSR po radioelektronike)  
 - Novye Itogi

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol. 3, No. 3,  
 PP 440 - 444 (USSR)

**ABSTRACT:** The conference took place during September 23 - 29, 1957, at Saratov State University (Saratov State University is now A.G. Chernyavskogo). Apart from the universities the conference was attended by the representatives of some scientific research institutes of the Soviet and Ukrainian Academies of Science, various industrial establishments and the interested ministries. This arrangement stimulated the discussion and evaluation of the papers presented and permitted the determination of plans for the future research to be carried out by the universities in the field of radioelectronics.

Card4/16 and with the Physics and Applications of gas-discharge devices at U.S.R. were discussed in the papers by B.A. Akhiezer, I.T. Trofimchenko, G.P. Antonov and N.G. Filimonova, who investigated the phenomena in certain oscillatory U.E.F. systems. The problem was also discussed in the papers: "The Velocity Distribution in a Disintegrating Plasma" by A.M. Lebedev, "Oscillations of a Gas Klystron Oscillator" by T.M. Skorobogat'ya, "De-electrodeaction of Gas and Antenna Switch" by U.V. Gorobcov and A.P. Churkin, "Cavity Resonators by Means of Gas Discharges" by U.V. Gorobcov and I.T. Byzov. The lecture of B.A. Kornilov entitled "Reflex Klystron as a Regenerative Amplifier" was of great practical interest. The simplicity of the amplifier permits the application of this device in the whole range of equipment where the comparatively high level of noise is not important. The session of Electroacoustics had six sessions during which over 20 papers and communications were read. A considerable part of these was devoted to the theoretical and experimental investigations of the propagation of electromagnetic waves in various delay systems. The paper by V.V. Dzhobava entitled "Scattering Properties of Certain Rod-type Delay Systems" gave the scattering equation for a structure consisting of a number of arbitrarily located rods (stub). The equation was employed to analyze single-stage stubs.

It was shown that the theory was in agreement with the experimental results. The communication by L.I. Basanov and E.I. Danze entitled "Propagation of Electromagnetic Waves in a Non-uniform Helix" gave the results of a perturbation-method investigation of the effect of random longitudinal and radial displacements of the helix conductor on the characteristic of the delay system. The results obtained by the authors permit the orientation of the tolerances in the helices employed in backscatter-wave tubes. The paper "Generalization of the Circuit Theory including the Helical Delay Systems" concerned with the possibility of the application of small perturbations to the measurement of the coupling impedance in a wide range of delay systems. Apart from the theoretical justification of the above method of measuring the coupling impedance, the paper gave some experimental results.

BESPALOV, V. I. (NIRFI, Gor'kiy)

"Some Problems of the Wave Propagation in Random Heterogeneous Transmission Lines."

Dealt with discrete and continuous random heterogeneities. Further, the correlation of the reflection factor, caused by heterogeneities during the propagation of waves with different frequencies, was discussed.

report presented at the All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V. I.)

BESPALOV, V. I., Candidate Phys-Math Sci (diss) -- "Some problems on the distribution of electromagnetic waves in linear transmission with random heterogeneities".  
Gor'kiy, 1959. 9 pp (Min Higher Educ, Gor'kiy State U im N. I. Lobachevskiy),  
150 copies (KL, No 24, 1959, 124)

05484

SOV/141-2-2-9/22

AUTHORS: Bespakov, V.I. and Daume, E.Ya.TITLE: Propagation of Electromagnetic Waves in a Helical Line  
with Small InhomogeneitiesPERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,  
1959, Vol 2, Nr 2, pp 213 - 222 (USSR)

ABSTRACT: Two models of a helical line are considered. First, the helix is approximated by a helically-conductive cylinder (Figure 1). The cylinder has a radius  $b$  and its conductivity forms an angle  $(\pi/2 - \epsilon)$  with the axis of the cylinder. The position of a point on the surface of a cylinder is described by co-ordinates  $\xi$  and  $\eta$  which are determined as follows. It is assumed that the cylinder is wound from a strip having a width  $\eta_0 = s \cos \eta$ , where  $s = 2\pi b \operatorname{tg} \epsilon$ ,  $s$  being the pitch of the helix. The turns of the strip are closely adjacent to each other but do not overlap. The co-ordinate  $\xi$  is measured along the strip, while  $\eta$  is measured transversely across the strip (Figure 1). In the absence of inhomogeneities, a wave propagates in the direction  $z$ ,

Card1/7

05484

SOV/141-2-2-9/22

Propagation of Electromagnetic Waves in a Helical Line with Small Inhomogeneities

which produces the following surface currents on the conducting cylinder:

$$\underline{J}(\xi, \eta) = I(\xi, \eta) \xi_0 \quad (1.1)$$

If a section of the line  $0 \leq z \leq l$  contains inhomogeneities, these result in a change of the magnitude and the direction of the currents in the line. By assuming that the surface of the helically-conducting cylinder consists of insulated conducting threads, the irregularities can be described by a vector:

$$\underline{f} = f_\eta(\xi, \eta) \eta_0 + f_r(\xi, \eta) r_0 \quad (1.2)$$

which determines the magnitude of the displacement of the threads. The direction of the conductivity is determined by the vector given by Eq (1.3). The current on

Card2/7

05484

SOV/141-2-2-9/22

Propagation of Electromagnetic Waves in a Helical Line with Small  
Inhomogeneities

a non-homogeneous section of the equivalent conducting surface can be written as Eq (1.4). The reflection coefficient at the input to a non-homogeneous line section can be expressed by (L.A. Vaynshteyn - Ref 6):

$$\Gamma = - \frac{\int_{\Sigma'} J' E d\Sigma'}{2 \int_{\sigma} (E_r H_\varphi + E_\varphi H_r) d\sigma} \quad (1.5)$$

where  $\Sigma'$  is the surface containing the exciting currents  $J'$ ,  $E_r$ ,  $E_\varphi$ ,  $H_r$  and  $H_\varphi$  represent the field of the wave propagating along a homogeneous cylinder in the direction of  $+z$ ,  $\sigma$  is the transverse cross-section of the line.  
Card3/7 If it is assumed that the conditions of Eqs (1.6) are

05484  
SOV/141-2-2-9/22

Propagation of Electromagnetic Waves in a Helical Line with Small Inhomogeneities

fulfilled, Eq (1.5) can be written as Eq (1.7), where  $P$  is the power flow through the transverse cross-section of the line. When the inhomogeneity is due to the displacement of the "threads" along the surface of the cylinder (see the conditions of Eqs (1.8)), the reflection coefficient is given by Eq (1.10); on the other hand, when the threads are displaced in the radial direction (Eqs 1.9), the reflection coefficient is given by Eq (1.11). The second model is in the form of a helix wound from a metal strip in such a way that the normal to the plane of the strip forms an angle  $\epsilon$  with the axis of the helix (Figure 2). The period of the helix  $s$  is small in comparison with the wavelength  $\lambda$  in free space and the width  $d$  of the strip. It is therefore possible to assume that the field between the turns is distributed in a manner analogous to that of a corresponding two-conductor line. The magnitude of the reflection coefficient due to inhomogeneities in such a helix can be evaluated from (M. Didlaukis, H. Kaden - Ref 8):

Card4/7

05484

SOV/141-2-2-9/22

Propagation of Electromagnetic Waves in a Helical Line with Small Inhomogeneities

$$\Gamma = \frac{j h_\xi}{Z_\xi} \int_0^L \Delta Z_\xi e^{-2 j h_\xi \xi} d\xi \quad (1.13)$$

where  $\xi$  is the co-ordinate measured along the line;  $h_\xi$ ,  $Z_\xi$  and  $L$  represent the propagation constant, the wave impedance and the length of an equivalent two-conductor line. Eq (1.13) can be transformed into Eq (1.15). Eqs (1.10), (1.11) and (1.15) can be employed to determine the reflection coefficient if functions  $f(\xi, \eta)$  and  $f(\xi)$  are known. The problem can be solved if it is assumed that the helix considered has a large number of inhomogeneities, i.e.  $l/\tau \gg 1$ , where  $\tau$  denotes the length of an irregularity and  $l$  is the length of the helix. Secondly, the irregularities are uniformly distributed along the line. It is now possible

Card5/7

05484

SOV/141-2-2-9/22

Propagation of Electromagnetic Waves in a Helical Line with Small Inhomogeneities

to determine the average square value of  $\Gamma$ . For this purpose, the correlation function of the irregularities is taken to be in the form of Eqs (2.1). On the basis of Eqs (1.10) and (1.11), it is shown that the average square values of the reflection coefficients for the first model are given by Eqs (2.2) and (2.3). In the case of the second model, the average square <sup>value</sup> of the reflection coefficient is given by Eq (2.4), when the turns are displaced axially and by Eq (2.5) when the thickness of the conductors is irregular;  $a$  in Eq (2.5) denotes the radius of a conductor. Graphs of Eqs (2.2) and (2.3) are given in Figures 3 and 4. The functions represented by Eqs (2.4) and (2.5) are illustrated in Figures 5 and 6. The effect of the inhomogeneities on the reflection coefficient was also investigated experimentally. The results are illustrated in Figure 7, 8 and 9.

Card6/7

05484  
SOV/141-2-2-9/22  
Propagation of Electromagnetic Waves in a Helical Line with Small  
Inhomogeneities

The authors express their gratitude to A.V. Gaponov for his interest in this work and for reading the manuscript. There are 9 figures and 11 references, of which 8 are Soviet, 2 German and 1 English.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: November 17, 1958

Card 7/7

68645

91400

AUTHOR: Bespakov, V.I.

S/141/59/002/05/006/026

E041/E521

TITLE: Statistical Characteristics of the Reflection Coefficient  
of a Wave in Randomly Non-uniform Transmission LinesPERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,  
1959, Vol 2, Nr 5, pp 711 - 719 (USSR)

ABSTRACT: There have already been a number of investigations of transmission lines with random inhomogeneities (Refs 1-19). In the majority of cases it has been assumed that the scattered fields are small and the method of perturbation has been used. Moreover, a fixed frequency has been previously assumed. The present paper examines the statistics of small reflections over a range of frequencies and finds the probability density function of reflection coefficients (not necessarily small) in an ensemble of statistically similar lines at a fixed frequency. The reflection coefficient at the input of a matched line containing random imperfections, found from perturbation theory, is Eq (1). If the range of correlation of the

Card1/4

4

10015

S/141/59/002/05/006/026

E041/E321

Statistical Characteristics of the Reflection Coefficient of a Wave  
in Randomly Non-uniform Transmission Lines

non-uniformities is appreciably less than the line length then the randomness condition for  $\Gamma$ , the reflection coefficient, is Eq (3). If  $x$  and  $y$  are the real and the imaginary parts of  $\Gamma$ , then the real and imaginary parts of  $S$ , the distribution function of the non-uniformities, are Eq (4). The latter satisfies the condition of Eq (3), when its right-hand side is zero. The result is a theorem analogous to that for the ergodicity of time processes and is: for a single line the input reflection coefficient tends to the same value for a change in frequency as the value of  $\Gamma$  changes in an ensemble of statistically similar lines, with a probability that tends to unity as :

$$\frac{r}{L} \rightarrow 0, \quad (h - h_0)L \rightarrow \infty \quad (5).$$

If a very long line is now considered then the values of reflection coefficients at points separated by distances much greater than the length of one non-uniformity form a

Card2/4

68645

S/141/59/002/05/006/026

E041/E521

Statistical Characteristics of the Reflection Coefficient of a Wave  
in Randomly Non-uniform Transmission Lines

simple Markov chain. The probability density of coefficients at these points can be represented by the Einstein-Fokker equation (9) which, for simplicity, is subject to the condition of Eq (8), which excludes the effect of dynamic changes in  $\Gamma$ . Further, in order that a differential equation may be used, it is supposed that the imperfections themselves are small but the line is very long. By the method of successive approximation the coefficients in Eq (9) are more succinctly stated as Eq (14), and Eq (9) becomes Eq (16). A general solution for the differential probability  $\Delta P$  does not seem possible and the probability density function of the reflection coefficient modulus is sought. Multiplying Eq (16) by  $\varphi$ , the phase angles of the reflection coefficient and integrating to infinite limits, Eq (16) becomes Eq (19). To find a solution by operator methods the transform Eq (20) is first found as Eq (34) and used in the inversion formula of Eq (35). The final expression for probability

Card3/4

4

S/141/59/002/05/006/026

E/041/E521

Statistical Characteristics of the Reflection Coefficient of a Wave  
in Randomly Non-uniform Transmission Lines

density, in terms of gamma functions, is Eq (42), though for computation, Eq (46) is more suitable and is represented in Figure 1. The dotted curves refer to previous calculations by the perturbation method. Agreement between the simple and the more refined calculation is satisfactory up to about  $\langle \rho^2 \rangle = 0.15$  (ensemble squared modulus average). The author thanks A.V. Gaponov, N.G. Denisov for discussions. There are 1 figure and 24 references, 11 of which are Soviet, 7 English, 1 French and 5 German.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut  
pri Gor'kovskom universitete (Radiophysics Scientific  
Research Institute of Gor'kiy University)

SUBMITTED: June 5, 1959

Card 4/4

92598 (1144)

30754  
S/141/6:/004/003/015/020  
E192/F382

AUTHORS: Bespalov, V.I., Kubarev A.M. and Selsuyevs, L.I.

TITLE: Experimental investigation of the influence of non-homogeneities on the characteristics of some delay systems

PERIODICAL: Izvestiya vysshikh uchebnykh zavedenii  
Radiofizika v. 4 no. 3 1961 pp. 534 - 546

TEXT: A theoretical investigation of the influence of non-homogeneities on the characteristics of delay systems has been reported in Ref. 1 (Radiotekhnika i elektronika 1956, 1, 772) and Ref. 2 (Dokl. Ak.nauk. 117, 209, 1957). The analysis was carried out under the assumption that the individual cells of the system could be described by means of idealised quadripoles. However, since such a description is approximate it is of interest to verify it experimentally. Consequently, an experimental investigation of the following types of delay lines was undertaken: Interdigital delay systems, metal-plate (comb-type) structures and chains consisting of a number of resonators. The interdigital system with two base surfaces is illustrated

Card 1/14

4